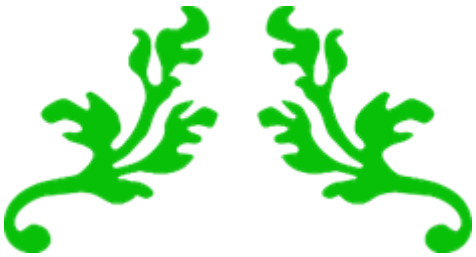

Examination of time as per Relativity, NyAya and VedAnta

Sudhanshu Shekhar

07.10.2025

यत्साक्षात्सच्चिदानन्दं प्रत्यगद्वयमक्रियम् ।

तन्नमामि नृसिंहस्य योगिगम्यं परं पदम् ॥

Foreword

OM!

स्वप्ने निमग्नधीर्जन्तु: पश्यति स्थिरताँ यथा।

सर्गस्वप्ने मग्नबुद्धि: पश्यति स्थिरताँ तथा॥

As a person whose mind is merged in the dream sees the stability of the dream, so also the one whose mind is merged in the dream like universes sees it to be stable.

(Yoga Vasishta Maha Ramayana)

It is a privilege to study Sudhanshu Shekhar's comprehensive exploration into the nature of time. His work brilliantly summarizes ideas from different schools of thought, setting the stage for a unique integration.

In the above verse, the Yoga Vāsiṣṭha suggests that stability is a byproduct of the mind being merged in this dream world. Time and causality are the central edifice on which this entire dream is built. Time and causality are like the two sides of a coin; they mean the same in essence. When we think of time, we think of it as a "flow" linking "events" causally. That is how we make sense of the world, and that is precisely how we construct the story of our lives.

It is in this context that Sudhanshu ji's summarization of the different viewpoints on time makes sense. Sudhanshu ji inquires into these ideas of time only to finally bring out the point that time is avidyā (ignorance). Scientific enquiry into time, in the context of relativity, often starts with events and their sequencing. But a more fundamental question could be what constitutes an event? How does one recognize an event? This is very

fundamental. I was particularly intrigued by the paper's detailed look at the Nyāya perspective, which insists that the inference of Kāla (Time) and its "flow" is only possible when associated with events.

To register any change—any event—requires a rupture in uniformity. Imagine an infinite, uniform plane moving at high speed: without a dot or a mark to break the spatial symmetry, no motion, no flow, and no time can be registered. The act of breaking symmetry is the fundamental mechanism that generates the **event**, and from this event, the dependent property of time **emerges**.

This concept offers a profound lens through which to view the Advaitic conclusion. If the mind is functionally condensed into the present moment, its only access to the notions of past and future is through collecting clues generated by these broken symmetries. The entire world we perceive—a continuous stream of events—becomes nothing more than a **functional projection** of the mind, enabled by its continuous act of observing and instigating these breaks. As modern cognitive science suggests, this perceived reality is not the absolute truth; it functions more like a computer desktop interface [Donald Hoffman]—a purely instrumental reality that facilitates action while masking the true, symmetric complexity beneath.

In this sense, the apparent sense of flow needs broken symmetry, and the mind simply constructs different events by breaking symmetries and accumulating broken symmetries. This process is perhaps what time really is, because the relationship is **bidirectional**: time needs broken symmetries, and breaking symmetries requires time to accommodate an event. So the two

“inter-are” (in Thich Nhat Hanh’s way of using the term). There is no time without broken symmetry, and there is no possibility of symmetry breaking if there is no time to accommodate an event!

Thus, to my understanding, this analysis by Sudhanshu ji is extremely interesting and intriguing because the apparent ideas of science, Nyāya, and Vedānta do not actually contradict each other. They just explain each other. The Vedānta explains the scientific and Nyāya views of time as even quantum mechanics explains the Newtonian observations.

Hyderabad
06.10.2025

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Introduction

Deeply troubled by appreciating his bondage, the seeker sets foot on the journey towards liberation. Without appreciating one's bondage, it is not possible for anyone to start the spiritual journey. This bondage reflects in the form of fear and desire. One appreciates that he is terribly afraid at all times and has merely put this fear under layers and layers of cover. "Nothing untoward should happen to my child", "My wealth should not be lost", "My fame should not be lost", "An earthquake should not ruin my home", "May diseases not afflict me and my dear ones" etc are some of the forms in which fear appears. These fears are rooted in desires. If one analyses, he finds that he is under a terrible grip of desires and fears. So much so that it is difficult to even sit in a relaxed manner and breathe. Even on the seat of meditation, one is "looking for" something. These desires and fears literally throttle one's neck.

Appreciating one's bondage appearing in the form of fears and desires, one asks as to what is this bondage and how to get free therefrom? He analyses and finds a unique characteristic of this bondage. It always appears along with time. Whenever there is perception of bondage, there is perception of time. And in deep sleep, when there is no perception of time, there is no perception of bondage either. He feels encouraged to equate time with bondage and seeks to understand the nature of time so as to negate it and be free from bondage.

Modern Science in the form of general and special theory of relativity explains that time as an independent entity is non-existent. It states that time

and space are inalienable constituents of a real entity named spacetime. And time is merely a projection, a shadow of spacetime and it varies from observer to observer depending on its relative velocity as well as location with respect to an object with mass. Negating the individual absolute existence of time and yet retaining a real spacetime, Modern Science conveys the reality of time and hence bondage.

NyAya too, like Modern Science, believes in a singular, omnipresent, eternal Time. While this singular Time, named mahAkAla is not amenable for transactions *per se*, it becomes eligible for transactions through limiting adjuncts which are born. It defines time in an elaborate manner. However, our seeker gets no respite because his bondage, co-appearing with time, retains its reality and hence non-negatibility.

It is only the nectarean truth explained by advaita vedAnta which calms the seeker. Advaita explains the utter unreality of time. Being a seen entity, time is explained to be illusory like the illusory snake seen on the rope. However, since time appears as a locus of everything (except shuddha chaitanya), it becomes logical to equate it with ignorance because ignorance also appears as the locus of everything. The fragmented-time experienced by us is admitted as avidyA-kArya. Thus, advaita vedAnta equates the mahAkAla with sAbhAsa-avidyA (avidyA with semblance of shuddha chaitanya) and khanDa-kAla as avidyA-kArya. However, depending on the stage of spiritual evolution of the seeker, it also postulates time variously such as flow (TaittirIya AraNyaka), or as kriyA-shakti of Ishwara, or as taTastha-lakshaNa of Brahman,

or as upalkshaNa of AtmA etc. However, as siddhAnta, it explains time either as avidyA or as avidyA-chit-sambandha.

The instant write-up examines the concept of time, rather elaborately, as per Relativity, NyAya and Advaita VedAnta. It is more to keep a record of my understanding of time in a systematic fashion. I am not sure as to what value it can add to the existing literature available on time.

Though the language used in this write-up is quite Sanskrita-nishTha, I feel it should remain so for clearer conception. The concepts are usually more difficult to understand when translated into English. I have retained the basic Sanskrit words and in some cases a set of words, which can be easily understood by using online LLM resources. I am sure that with a little bit of effort, one can understand the arguments presented.

I am indebted to Dr. Rahul Sarkhel ji of IIT Kanpur who has been a constant support in my quest of understanding advaita vedAnta. I express my heartfelt thanks to Shri Udai Shankar ji for constant interactions with respect to nature of time, ignorance and reality as per not only Advaita VedAnta but also Modern Science. I thank him for adorning this document by writing the Foreword.

I hope that this document will be useful to sincere seekers.

Sudhanshu Shekhar

07.10.2025 New Delhi

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Examination of time as per Relativity, NyAya and VedAnta

Relevance of this discussion

It is important to examine the concept of time. While everyone intuitively understands, appreciates and transacts using the concept of time, it becomes increasingly difficult when one ventures to formally define time. Vedanta defines time variously, the most important one being avidyA-chit-sambandha. It becomes interesting when the AvaraNa over the self-luminous Brahman is also defined as avidyA-chit-sambandha. So, questions arise - are time and AvaraNa the same? Is it the time by which our self-luminous Brahman-hood is hidden from us? If time is removed, will our Ananda-tva stand manifested to us? How to remove time? etc.

In this note, we will examine the concept of time as per theories of relativity, NyAya and advaita vedAnta.

2. Concept of time as per theories of relativity

2.1 Special theory of relativity

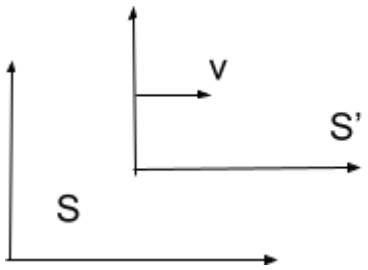
To understand the concepts in a simple fashion, one can take the case of motion in a single direction, let's say x-axis. If we do a little mathematics, we arrive at the following equations:

$$
\begin{aligned}
t' &= \gamma\left(t - vx/c^2\right) \\
x' &= \gamma\left(x - vt\right) \\
y' &= y \\
z' &= z,
\end{aligned}
$$

where

$$\gamma = \frac{1}{\sqrt{1 - v^2/c^2}}$$

Here, the frames of references are S and S'. An event has coordinates (x,y,z,t) in frame S and (x',y',z',t') in frame S'. The frame S' moves at a velocity v with respect to frame S. Basically, the frame which is moving is denoted by S'. Velocity is direction-sensitive.



If we wish to write the reverse equations, we can either do algebra or simply replace v by -v. And write the equation as under:

$$
\begin{aligned}
t &= \gamma(t' + vx'/c^2) \\
x &= \gamma(x' + vt') \\
y &= y' \\
z &= z'.
\end{aligned}
$$

It is seen that certain quantities are invariants. It means that they are constant across all frames of reference:

1. $x^2 + y^2 + z^2 - c^2t^2$
2. $(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2+c^2(t_2-t_1)^2$ [Two events have coordinates (x_1,y_1,z_1,t_1) and (x_2,y_2,z_2,t_2) from the frame of reference S]

2.1.1 Important derivations regarding time-dilation

1. The generic relationship between two events in two frames of references is: $(t_2'-t_1') = \Upsilon\{(t_2-t_1) - (v/c^2)\times(x_2-x_1)\}$. The equation is simply derived from the formulae given above. It is clear that if events happen in frame S at the same place, i.e. if x_2 is the same as x_1, then the order of time cannot be altered. However, if they are not the same, then order of time can be altered.

2. The time difference between two events in S' frame is found by $(t_2' - t_1') = \Upsilon(t_2 - t_1)$. <u>This is true provided the S frame is such where these two events happen at the same place</u>. So, the duration of time spent between two events varies depending on the frame of reference. Since γ is necessarily greater than 1, the duration of events in the moving frame is necessarily more than the frame which is stationary. So, let us say that there is a clock ticking at its usual rate at a station. When the same clock is seen from a moving frame, let us say by a person sitting on a train, then this very same clock on the station will run slow as compared to the clock with the person sitting in the train. So, basically, the moving clock runs slow. [https://www.youtube.com/watch?v=Pcq3Bw9_mAM&t=1875s]

3. Proper time-interval is the time-interval between two events which happen at the same place. This is the smallest time-interval possible. All other frames will have time-duration between events as more than this on account of Υ being necessarily more than 1. So, if there exists a frame in which two events happen at the same place, then the order in which these two events happen cannot be altered. This is because the sign of gamma is unchanged, and hence (t_2' - t_1') will have the same sign as (t_2 - t_1). However, if such a frame does not exist, then the order of events is changeable. [https://www.youtube.com/watch?v=5RmmGnIlr7Y&t=220s]

4. Let us say that the war of Panipat happened in 1526 and the Battle of Plassey happened in 1757. These two places are 1600 km apart. These two events happened at different points of time and at different places. However, if an observer moves from Panipat to Plassey at the speed of (1600km/231year) i.e. 0.00022 m/s and starts in 1526, these two events will happen at the same place. And since for him, Battle of Plassey happened later, in all frames of reference, Battle of Plassey would happen subsequent to the war of Panipat. This example demonstrates the retention of the principle of causality in relativity.

5. If two events happen at different places at same time in frame S, then in frame S', their time duration will be: $(t_2'-t_1') = -\Upsilon(v/c^2)\times(x_2-x_1)$. This shows that simultaneous events at different places, in general, are non-simultaneous in other frames. Depending on the direction of velocity, the simultaneous events in one frame, may appear to be

future-past or past-future in another frame. [https://www.youtube.com/watch?v=5RmmGnIlr7Y&t=984s]

6. To intuitively understand the retention of causality in special relativity, the concept of light cone needs to be grasped. It essentially explains the same thing in a geometric form. [https://www.youtube.com/watch?v=bcZyJ7yXebQ]

7. Since in order to go out of the light cone, one needs to move at a speed more than speed of light which is not possible, one cannot go out of the light cone. And hence causality is retained in relativity. Within the light cone, it is possible to find a frame S where the two events happen at the same place. And hence order of time will be retained in the entire light cone for all the events. But the events within and without the light cone, the order of time can be reversed. However, they are not causally connected as no information can be interchanged between them.

8. If the formula, $(t_2'-t_1') = \Upsilon\{(t_2-t_1) - (v/c^2)\times(x_2-x_1)\}$, is analysed, then we can appreciate that the events which are simultaneous in S' i.e. in the moving frame will have t_2' and t_1' as identical. This shows that (t_2-t_1) will be identical to $(v/c^2)\times(x_2-x_1)$. That means, simultaneous events in S' refer to two events in S frame which are segregated by a time duration (in S frame) of $(v/c^2)\times(x_2-x_1)$. Since, v is sign-sensitive being a vector, the events will accordingly be in the past or future. Thus, the "now" of the person in S' may be the past of the person in frame S, or depending on the direction of velocity, be the future in frame S. Since nothing should materially change based on the direction of motion of some alien person with respect to me, it transpires that past, present and future must

co-exist and their difference can at best be an illusion. [https://www.youtube.com/watch?v=vrqmMoI0wks]

2.1.2 Important derivations regarding space-contraction

1. There is no contraction of space in the direction perpendicular to the direction of motion.

2. If L' is the length of the rod, in the direction of motion, in S' frame, then L' = L/ϒ. This means that L' is necessarily lesser than L. So, the length of an object in a moving frame is lesser than its length in a frame wherein it is not moving.

3. To understand through an example, let us take a spaceship departing from Earth at a speed say 0.6c. Let us say that the length of the spacecraft is 100m when it started. From the frame of reference of the person sitting within the spacecraft, the spacecraft is at rest. So, the length of the spacecraft's frame will remain constant at 100m. However, from the frame of reference of Earth, the spacecraft will appear to have length of 100/ϒ i.e. 80m. From the frame of reference of spacecraft, the entire universe will be moving at a speed 0.6c and hence all distances will appear contracted. So, Earth's diameter will appear shrunk by a factor of ϒ and the distance between Earth and Sun will also appear to be shrunk by a factor of ϒ.

4. The Sun's rays take 500 seconds to reach from Sun to Earth. Travelling at c, the distance from Earth to Sun amounts to 15 crore kilometers. So, when the spacecraft leaves from Earth to Sun, the person on Earth will say that the spacecraft reaches the Sun after (15 crore kilometres/0.6c)

seconds i.e. 833.33 seconds. However, for the person sitting in the spacecraft, the space between Sun and Earth is contracted and is at (15 crore kilometers*0.8) i.e. 12 crore kilometers. He would see himself at rest and the Sun coming towards the spacecraft at the speed 0.6c. So, he would say that the Sun reaches him at (12 crore km/0.6c) 666.67 seconds.

5. To understand the concept more intuitively, if the spacecraft travels at the speed 0.999999c, then the person on Earth would say that he takes almost 500 seconds to reach the Sun, but the person on the spacecraft would say that it takes only 1.18 seconds for him to reach the Sun. [If the spacecraft were to move at the speed of light (which is not possible), the distance between the Sun and Earth, or for that matter any distance, would shrink to 0.]

6. Watch https://youtu.be/YAmHAKdyV1o?si=U7oxcoQMHk5_SbJW for better understanding.

2.1.3 Important derivations regarding mass and velocity

1. The mass of the object, appearing at rest with respect to an observer, is stated as m_0. The mass of the object m, with respect to an observer having relative velocity v, is arrived at: $m = m_0\Upsilon$. So, mass at some relative velocity with respect to an observer is always more.

2. Calculations show that v can never be greater than c because::

$$v = \frac{Ftc}{\sqrt{m_0^2 c^2 + F^2 t^2}}.$$

This shows that the denominator is always greater than 1 and hence v can never be more than c.

2.1.4 Intuitive understanding

The entire special theory of relativity is based on two postulates which are experimentally and mathematically proved. They are as under:

- The laws of nature have identical form in all inertial frames of reference.
- The speed of light in vacuum has the same value c in all inertial frames of reference.

Since two inertial frames of reference cannot be distinguished and it is mathematically and experimentally demonstrated that space and time with respect to an event are dependent on the velocity of the frame of reference, it is clear that space and time in isolation do not exist. Rather, the only meaningful discussion can be held with respect to space-time. To intuitively understand space-time, one can see the video https://youtu.be/TJmgKdc7H34?si=eo6w9sveelNujlT6.

2.1.5 Space and time as shadows of space-time

It basically explains that in space-time (with time-axis being ct), everything is moving with a velocity c. What we refer to as motion in space is nothing but a shadow of movement in space-time on space-axis, and motion in time is nothing but a shadow of movement in space-time on time-axis.

So, when an object is stationary in space, it is actually moving in time (ct) at a speed of c. If an object were to move in space at speed c, there will be no motion in time (time will be still). In other cases of motion in space at speed

less than c, the total speed is divided between motion in space and motion in time. Thus, space and time are so interrelated that the net speed in spacetime is c.

Hermann Minkowski famously said “henceforth space by itself, and time by itself, are doomed to fade away into mere shadows, and only a kind of union of the two will preserve an independent reality". This intuitive understanding is a key as it is the space-time which is having the actual reality whereas space and time in themselves are mere shadows.

2.1.6 Takeaways of special theory of relativity with respect to time

1. Time cannot be discussed in isolation without bringing in space. The movement in time and movement in space are inversely proportional. There is neither absolute time nor absolute space. We cannot say that the time to reach the Sun from Earth is this much or the distance from the Sun to the Earth is this much. It depends on the observer and both are correct. This shows that there is neither absolute time nor absolute space. However, there is absolute space-time. Similarly, it cannot be said that the distance between Delhi and Patna is 1000 km and that it takes 10 hours to reach Patna from Delhi. It all depends as to which frame of reference is taken. Depending on the speed of the frame of reference, the distance changes and hence changes the time taken. The only thing constant is space-time. Space and time individually are changeable.

2. The distinction between past, present and future is not correct. There are events in space-time which are accessible at this point of time to

different observers. The “now” of different observers at a given point of time is different and hence events of past, present and future co-exist.

3. The simultaneity of events is frame-dependent. Events which are simultaneous for one person, may not be simultaneous for another person.

4. Causality is retained in relativity. The cause-event always precedes effect-event in all frames of references.

5. Time can be defined as a fraction of movement of space-time.

2.2 General theory of relativity

While the special theory of relativity deals with inertial frames of references i.e. observers who move with respect to each other at constant velocity, i.e. without acceleration, the general theory of relativity takes into account the effect of acceleration by incorporating non-inertial frames and seeks to explain motion along with gravity. The special theory uses linear Minkowski spacetime (flat spacetime) whereas the general theory uses Riemannian geometry (curved spacetime). With respect to everyday examples, special theory successfully explains as to why fast-moving particles in accelerators live longer than expected (time dilation). On the other hand, the general theory explains as to why clocks tick differently at different altitudes due to the geometry of space-time.

We will restrict the implications of general theory of relativity to the concept of time. We had noted in special theory that time and space are not separate entities in themselves. Rather they are projections of space-time on

two axes. Thus, we arrived at the concepts of time-dilation and space-contraction. General theory also implies time-dilation but it is of a different kind. It is not caused by the motion of the observer, but due to different phenomena related to geometry of space-time.

The general theory of relativity is primarily based on the principle of equivalence which states that being in a gravitational field is locally indistinguishable from being in a uniformly accelerated frame of reference. This is demonstrated by the fact that a person inside a spaceship falling towards Earth under gravity floats as if in deep space, and the person would feel weightless. Further, if the spaceship is accelerating in deep space with 9.8 m/s^2, the person inside would feel a force pushing them into the floor, and a dropped object would fall to the floor with the same acceleration as on Earth.

Once the principle of equivalence is admitted, it is then shown that acceleration can be explained by curvature of space-time. So, any object with mass basically bends and curves the space-time around it. The stationary objects would merely follow the curved lines which appear as motion under gravity.

2.2.1 Intuitive understanding:

We have seen earlier that objects are not stationary in space-time. An object which appears stationary in space is actually moving at a speed of light on time-axis (ct-axis). Now this movement is along straight lines as it is the shortest distance. However, general theory states that objects with mass bend space-time and hence even the object stationary in space will appear to be in motion due to curved spacetime. So, when we see an apple “falling” from a

distance, the apple is actually stationary in space, but moving in time. Since space-time is distorted near Earth, it moves in that curved line (through time) and appears to be falling to Earth.

So, even when we are stationary in space, we are moving in time, from present to future. The idea is -- in spacetime, we always move. And that speed of movement in spacetime is the speed of light. When we move in space, we proportionately reduce the speed in time.

So, stationary in space -- full speed in time (c).
Stationary in time -- full speed in space (c).
This motion is through straight lines.

In the case of objects with mass, these lines of space-time are distorted. So, motion through spacetime in straight lines results in a motion which gives the appearance of curved motion as if by a force.

It is important to understand that the curvature of space-time becomes a movement of contraction with the rate of this contraction being constant and perpetual. This is so because the curvature of space-time depends only on the mass of the Earth, which is always the same. It is also very important to understand that the geometry does not really contract. It is the fact that straight lines get closer together that gives this impression of contraction. The phenomenon is quite similar on the surface of Earth where the curvature is constant on the sphere but the parallel longitudes seem to be perpetually getting closer together towards the north and south pole. Thus, the curvature of space-time appears as an endless contraction of the grid. So, technically, it is

stated that the volume contained between geodesics shrinks over time because of the curvature. This is how the acceleration of Earth also comes up because it is always going against the natural movement of the grid. Further, if we throw an object sideways with an initial velocity without any force being applied on it, it will therefore continue in a straight line within the grid but as the grid contracts the object is constantly pulled back towards the Earth. This is how the moon orbits the Earth and the Earth orbits the sun.

The following videos may be seen better visual understanding of the concepts:

https://youtu.be/wrwgIjBUYVc?si=xSwn3hTkaHb4CIIA

https://youtu.be/DYq774z4dws?si=j7yIfAnIX-y0dvLZ

2.2.2 Time-dilation in general theory of relativity

Once this concept of curvature of space-time is clear, it is easy to appreciate that curvature of space-time is stronger near Earth than as compared to places far from it. The “well” of spacetime is deeper near Earth. So, closer to Earth, let’s say sea-level, there is more curvature and hence time slows down. On top of Mount Everest, time will pass faster.

Further, since mass curves spacetime, there is curving of space also. And this is reflected in the bending of light near Earth. Light takes the shortest path, which is a straight line. But since the line itself is bent, light simply takes that path which appears to us as bent.

To understand it with a practical example, we need to understand the case of GPS. The satellites orbit about 20,000 km above Earth. Since the curvature of spacetime is weaker there, the clocks run faster by ~45

microseconds per day compared to Earth clocks as per general theory. But since they are also moving fast, as per special theory, they slow down by ~7 microseconds/day as compared to Earth's clocks. Now, the net effect is that they still run ~38 microseconds faster than Earth's clocks and the engineers must correct this daily, otherwise our GPS would be off by kilometers! This shows that general theory and special theory are pretty much vetted by our daily experience.

This shows that our feet age slower than our head. In fact, with atomic clocks separated by just 30 cm in height, the difference in ticking has been measured.

2.3 Sum and substance of theories of relativity in so far as time is concerned

The crux of the matter is that there is nothing like an absolute time within which we are living our lives. Nor is there something like absolute space. Instead, there is something called spacetime which appears differently to different observers under motion or near massive objects.

The notions of past, present and future are unacceptable as at the same instant of time, different observers are accessing events which have happened at different instants of time of other observers. It is all a question of the ability of access. The events are all out there in spacetime. However, the causality is kept intact.

Relativity is a classical theory. While the special theory is tested at quantum levels, the general theory is yet to be understood at quantum level.

The problem with quantum scale is that the position of the particle cannot be said to be uniquely positioned so as to distort the time and space around it. Since the position is a wave-function of probabilities, it is difficult to propound the curvatures thereby. Hence, general relativity at quantum level is yet to be accepted.

Thus, we see that while absolute time is discarded, a 4-dimensional spacetime is retained in Modern Physics.

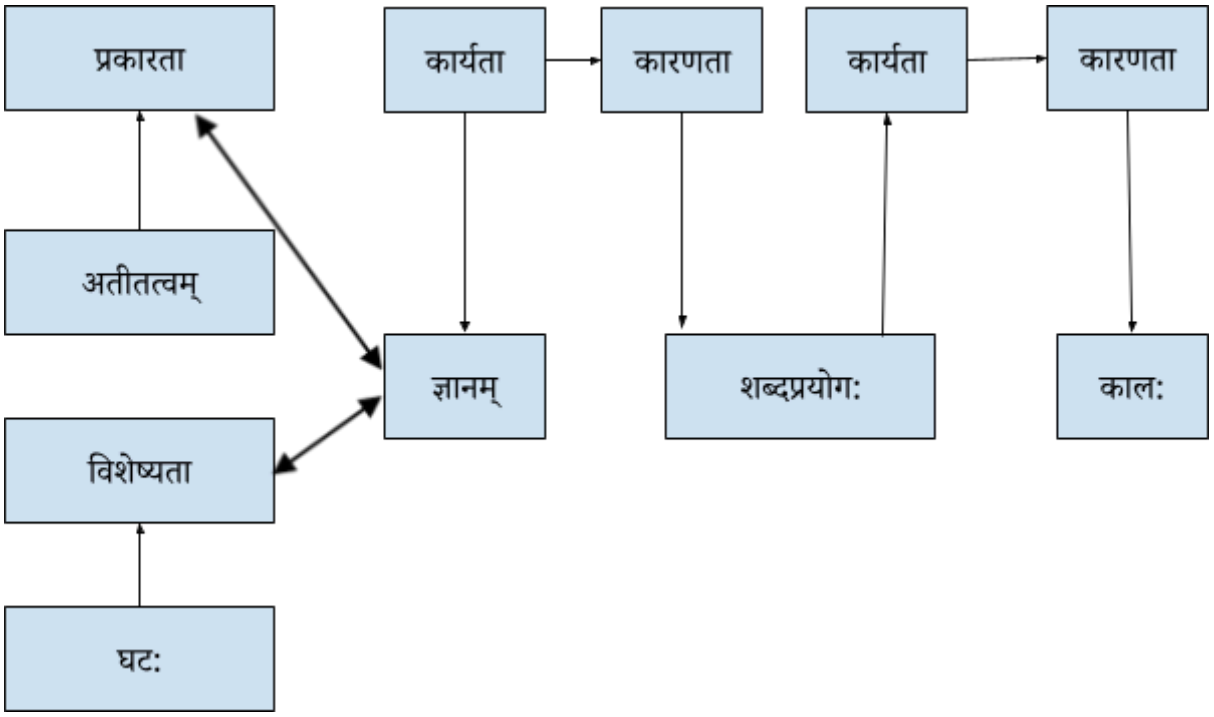
3. Concept of time as per NyAya

NyAya takes a common sense perspective of time and presents it in a rigorous fashion. As we know, NyAya holds padArtha to be seven in number namely dravya, guNa, karma, sAmAnya, vishesha, samavAya and abhAva. [द्रव्यगुणकर्मसामान्यविशेषसमवायाऽभावा: सप्तपदार्था: ॥ १॥]. Here, dravya is again nine in number namely prithivI, water, fire, vAyu, AkAsha, kAla, dik, AtmA and manas. [तत्र द्रव्याणि पृथिव्यप्तेजोवाय्वाकाशाकालदिगात्ममनांसि नवैव ॥ २॥]. So, we see that kAla is admitted in NyAya as a dravya which is, in turn, a padArtha.

3.1 Definition of time as per NyAya

KAla is defined by Tarka Sangraha as अतीतादिव्यवहारहेतु: काल: । स चैको विभुर्नित्यश्च ॥ १५॥. This basically means that kAla is a dravya which is the cause of vyavahAra of past, present and future. And this kAla is singular, omnipresent and eternal. This is also referred to as mahAkAla.

Let us understand the meaning of vyavahAra. It basically means ज्ञान-जनक-शब्द-प्रयोग. In everyday transactions, we make usage such as “घट: अतीत:, घटो वर्तते, घटो भविष्यति, अधुना घटो नास्ति”. These usage cannot be explained by the other eight dravya. So, another dravya needs to be admitted which is the cause of such shabda-prayOga which in turn is the cause of the knowledge such as “pot was existent, pot is present, pot will come up”. When someone makes a shabda-prayOga “घट: अतीत:”, then we do get a jnAna which has a past-pot as its object. So, this shabda-prayOga has a jnAna-janakatA. Now, it is the kAla which has the causality towards such shabda-prayOga which in turn has causality towards jnAna having its vishaya the past/present/future objects. Depicting pictorially, the schematic diagram for “घट: अतीत:” shall be as under:



If we write it formally, then it will amount to अतीतत्व-अवच्छिन्न-प्रकारता-निरूपित-घटत्व-अवच्छिन्न-विषेष्यता-निरूपक-ज्ञाननिष्ठ-ज्ञानत्व-अवच्छिन्न-कार्यता-निरूपित-शब्दप्रयोगत्व-अवच्छिन्न-कारणता-आश्रय-शब्दप्रयोगनिष्ठ-शब्दप्रयोगत्व-अवच्छिन्न-कार्यता-निरूपित-कारणता-आश्रयत्वं कालस्य लक्षणत्वम् [VidyAdharI-page 55]. Similarly, diagrams can be drawn for “घटो वर्तते”, “घटो भविष्यति” etc. [By the word hetu in the lakshaNa, it is the asAdhAraNa-nimitta-kAraNatA that is meant. TarkabhAshA, page 365]

Now, since this kAla is singular, omnipresent and eternal, it does not possess vyavahAra-yOgyatA. It is only by accepting something which is limited, by which it is segregated, that kAla can be an object of transactions. [अत: परिच्छिन्न: केनचित् पदार्थेन पृथक्कृत: काल: अस्माकं व्यवहारयोग्य: भवति, VidyAdharI-page 56]. For example, we can take the event of the birth of Christ. And then we can make usage of the infinite kAla by stating “Before Christ” and “After Christ”. Thus,

the singular, omnipresent and eternal “mahAkAla” becomes eligible for vyavahAra. Subsequently, by the motion of hands in a clock, we devise units such as minute, second, hour, days, year etc and thus also, mahAkAla becomes vyavahAra-yOgya.

Thus we see that when there is restriction, limitation of mahAkAla by some upAdhi, then there comes about vyavahAra-yOgyatA therein. Now, this upAdhi-tva is present in all objects which are born. For example, let us say a home named Padmalaya comes up in 1975. Now, this born object brings sankOcha in mahAkAla. And therefore, it becomes the upAdhi thereof and one can transact in manners such as “Shivalaya came 10 years after PadmAlaya, ShAradAlaya came 5 years before PadmAlaya” etc. Therefore, the objects which are born and experience some activity, only they are qualified to be the upAdhi of kAla. Objects which are not born (as per NyAya) such as AkAsha and paramANu etc cannot be upAdhi of kAla. So, a rule is formulated - **जन्यानामेव कालोपाधित्वम्,** [VidyAdharI - page 58].

So, when usage of words such as “इदानीं घट:” “तदानीं पट:” is made, then it is the kAla which appears as AdhAra, adhikaraNa. Here, all padArtha have kAla as the adhikaraNa, whether they are born or unborn. This is so because kAla is AdhAra of everything. [इदानीं पृथिवी, तदानीं वायु:, इदानीमाकाश:, इदानीं रूपादय:, क्रिया:, घटत्वम्, विशेष:, समवाय: अभावो वा इत्यादि प्रतीतिभि: सर्वेषामेव पदार्थानां कालवृत्तित्वं निश्चीयते इति **सर्वाधार: काल:** इति अपरोऽपि नियम: सिद्ध्यति- VidyAdharI, page 58]

Now, since kAla has adhikaraNa-tva with respect to all padArtha, there has to be a sambandha between kAla and padArtha. This sambandha is called kAlika-sambandha. This is the sambandha which is present between kAla and padArtha. It is different from samyOga, samavAya etc.

3.2 Further explanation of kAlika-sambandha

NyAya postulates that this kAlika-sambandha is present not only between kAla and other padArthAs, but also between two padArtha which have together experienced some kriyA. If there is any time-overlap between two objects, then both have mutual AdhAra-Adheya-bhAva through kAlika-sambandha. So, if PadmAlaya comes up in 1975 and is destroyed in 2000, Shivalaya comes up in 1985 and is destroyed in 2006 and Sharadalaya comes up in 2005, then:

- Padmalaya and Shivalya have mutual AdhAra-Adheya-bhAva through kAlika-sambandha. So, one can say that Shivalaya is present in Padmalaya through kAlika-sambandha and vice versa.
- Padmalaya and Sharadalaya have no mutual AdhAra-Adheya-bhAva nor are they connected through kAlika-sambandha.
- Shivalaya and Sharadalaya have AdhAra-Adheya-bhAva through kAlika-sambandha.

So, महाकालस्य सर्वाधारत्वेऽपि यमुपाधिमाश्रित्य विस्तृतस्य कालस्य कालिकसम्बन्धः सिद्धः, तस्य उपाधेरपि तेन सम्बन्धेन अधिकरणत्वं स्वीक्रियते....सर्वेषामेव जन्यानां कालोपाधित्वं, उपाधित्वात् कालिकेन अधिकरणत्वमपि सिद्ध्यति... ययोः कालिकेन आधाराधेयभावः वक्तव्यः ताभ्याम् अभिन्ना एका काचन क्रिया सह-अनुभोक्तव्या. [VidyAdharI-page 58-59]

Further, NyAya accepts it as a rule that if x appears as an adhikaraNa of y-utpatti, then x is a kAraNa of y. KapAla is seen as the adhikaraNa of pot-utpatti. Hence, kapAla is the cause of pot. Similarly, all objects appear to be born in time. Hence, time is the cause of everything. When we say “इदानीं घटः

उत्पद्यते", then by the word इदानीम्, it is the mahAkAla which is denoted and is thus the cause of ghaTa. [VidyAdharI, page 138]

3.3 A snapshot of discussion on kAla thus far as per NyAya

Thus, the following are the key points:

- kAla is a dravya, which is singular, omnipresent and eternal.
- It is the cause of shabda-prayOga which in turn is the cause of a knowledge having past/present/future objects as vishaya.
- kAla is not vyavahAra-yOgya.
- Through anything born, there comes about sankOcha of kAla and thus through that upAdhi, kAla becomes fragmented and attains yogyatA of vyavahAra.
- Only those objects which are born can become upAdhi of kAla.
- kAla is the adhikaraNa of everything.
- The relationship between kAla and the objects is called kAlika-sambandha.
- Those upAdhis which have some time-overlap between them also possess mutual AdhAra-Adheya-bhAva through kAlika-sambandha.
- Time is the sAdhAraNa-kAraNa of the entire world.

3.4 kAla can be inferred from paratva and aparatva

There is something called paratva and aparatva. They are caused by both time and direction (kAla and dik). Here, we restrict ourselves to काल-कृत-परत्व-अपरत्व. [कालोऽपि दिग्-विपरीत-परत्व-अपरत्व-अनुमेयः, Tarka BhAshA, page 360]

When we see two brothers Ram and Lakshamana, and see obviously that Ram is elder to Lakshamana, then it is this elder-ness which is called

para-tva and the opposite is called apara-tva. Here, NyAya explains the concepts as under. It says that any bhAvAtmaka-kArya has to have samavAyi-kAraNa, non-samavAyi-kAraNa and nimitta-kAraNa. This is a general rule. Now, there is something called sUrya-kriyA which is heating the environment. This sUrya-kriyA has contact with Ram's body for a greater period of time as compared to Lakshamana's body.

Now, when Ram is seen to possess paratva, then his body is the samavAyi-kAraNa of this paratva. The samyOga of Ram's body with kAla is the asamavAyi-kAraNa of paratva and sUrya-kriyA-sambandha-with-Ram (through samyOga with kAla) is the nimitta-kAraNa of paratva. [This samyOga, which is the asamavAyi-kAraNa of para-tva, is located in both Ram's body as well as kAla]. So, if kAla is not admitted, then nimitta-kAraNatA and asamavAyi-kAraNatA cannot be explained. This is because there is no direct contact of sUrya-kriyA with Ram or Lakshamana. It is a paramaparA-sambandha of the nature of स्व-आश्रय-संयुक्त-संयोग. Here, "swa" refers to sUrya-kriyA. Its Ashraya is the Sun. kAla is in contact with Sun, and it is the kAla which in turn has samyOga with Ram and Lakshamana. So, kAla can be inferred from the appearance of paratva and aparatva in Ram and Lakshamana respectively.

It is to be noted that this paratva and aparatva is caused by kAla and is different from paratva and aparatva caused by directions (dik).

The definitions of time can thus be articulated also as follows:

- विभुत्वे सति दिगसमवेत-परत्व-असमवायिकारण-अधिकरणं काल:

    - By the usage of vibhutva, ativyApti in Ram's body is negated. To negate ativyApti in dik, the word dik-asamavet is used.
- परत्व-अनाश्रयत्वे सति विजातीय-परत्व-असमवायिकारण-संयोग-आश्रय: काल:

Since kAla does not have udbhUta-rUpa or udbhUta-sparsha, there cannot be pratyaksha-pramANa for time. But through anumAna-pramANa, there can arise pramA for kAla as per NyAya.

3.5 What exactly is past, present and future

If we see the definition of kAla as per NyAya, it says अतीतादिव्यवहारहेतु: काल: । Question arises as to what exactly are अतीतत्व, वर्तमानत्व and भविष्यत्त्व. Further, one can argue that postulating kAla as singular is not justified as kAla is experienced in fragments and is different such as past, present and future. Hour, minute, year, second are also fragmented and appear different. So, time cannot be singular.

NyAya refutes this by saying that just as singular Devadatta is stated as reader, cook, player etc on account of upAdhi of reading, cooking, playing etc, similarly singular time is described by several names on account of difference in upAdhi. Earlier NyAya texts describe sUrya-kriyA as upAdhi while navya-NyAya texts hold born-object-alone (जन्य-वस्तु-मात्र) as the upAdhi.

Now, past, present and future are defined as under:

- वर्तमान-ध्वंस-प्रतियोगित्वम् अतीतत्वम्
    - Whichever objects were born before this instant moment and were destroyed, or whichever sUrya-kriyA happened prior to this

instant moment and destroyed - their dhvamsa is present as of now. The pratiyOgitA of this dhavsa is defined as ateeta-tva.

- वर्तमान-प्रागभाव-प्रतियोगित्वं भविष्यत्त्वम्
    - All sUrya-kriyA or all objects which will be born after this instant moment - have their prAk-abhAva in this moment. The pratiyOgitA of this prAk-abhAva is called bhavishyat-tva.
- स्वध्वंस-प्रागभाव-अनधिकरणकाल-वृत्तित्वं वर्तमानत्वम्
    - Let there be an object x or sUrya-kriyA x. If there is a time in which neither x's dhvamsa is present, nor x's prAk-abhAva is present, then that time is the present moment. The located-ness in the time which is not the locus of either the dhvamsa or prAk-abhAva of x, that located-ness is called vartamAna-tvam.

So, in simple words, if x's dhvamsa is present in this moment, then pratiyOgitA-of-present-dhvamsa is called ateeta-tva. If x's prAk-abhAva is present in this moment, then pratiyOgitA-of-present-prAk-abhAva is called bhavishyat-tva. And, the located-ness in the time which is not the locus of either the dhvamsa or prAk-abhAva of x is called vartamAna-tvam.

So, the Tarka-bhAshA says - स (कालः) च एकोऽपि वर्तमान-अतीत-भविष्यत्-क्रिया-उपाधि-वशाद् वर्तमानादि-व्यपदेशं लभते। पुरुष इव पच्यादि-क्रिया-उपाधि-वशाद् पाचक-पाठक-आदि-व्यपदेशम्।

3.6 Sum and substance of NyAya view of time

We can appreciate that NyAya seeks to explain our everyday experience of time by elaborately defining it. It accepts a time present as a dravya and as a

locus of all padArtha. Detailed analysis of kAla per se seems to be absent in NyAya.

4. Concept of time as per VedAnta

Time is variously defined in advaita vedAnta. While time is primarily defined as either avidyA-chit-sambandha or avidyA itself, there are occasional mentions of time:

- ***as kriyA-shakti of Ishwara***
    - (यस्सर्वेषु भूतेषु तिष्ठन् ' इतिश्रुतेः सर्वगतस्यान्तर्यामिण ईश्वरस्य या कालाख्या क्रियाशक्तिः तदधिष्ठितात् - MAnasOllAsa 2.14),
- ***as taTastha-lakshaNa of Brahman (the timeless)***
    - द्वे वाव ब्रह्मणो रूपे कालश्चाकालश्चाथ य: प्रागादित्यात् सोऽकालोऽकलोऽथ य आदित्याद्य: स काल सकल, सकलस्य वा एतद्रूप यत्सवत्सर संवत्सरात्खल्वेवेमा: प्रजा: प्रजायन्ते, सवत्सरेणेह वै जाता विवर्धन्ते, सवत्सरे प्रत्यस्तम्यन्ति, तस्मात् संवत्सरो वै प्रजापति कालोऽन्न ब्रह्मनीडमात्मा चेत्येव ह्याह- काल: पचति भूतानि सर्वाण्येव महात्मनि । यस्मिंस्तु पच्यते कालो यस्त वेद स वेदवित् ॥ (Maitryupanishat 6-15)
    - There are, verily, two forms of Brahman-Time and the Timeless. That which is prior to the Sun is the Timeless, without parts. But that which begins in the Sun is Time which has parts. The form of that, indeed, which has parts, is the year. From the year, in truth, are these creatures produced. After having been produced, do they grow by the year, in the year they disappear. Therefore, the year, verily is Prajapati, is Time, is food, is the Brahman-abode and is Atman. For thus has it been said-

      'Time cooks created things, all things, indeed, in the Great Soul. In what, however, is Time cooked-who knows That, he the Veda knows'
- ***as upalakshaNa of AtmA***

- (काले कालोपलक्षितमुक्तात्मादौ - LaghuchandrikA - अद्वैत श्रुतेर्बाधोद्धारः).

However, the predominant treatment of time in VedAnta is as avidyA-chit-sambandha. Further, this avidyA-chit-sambandha is also avidyA-Atmaka. Advaita Siddhi explains in avidyA-lakshaNa-vichArah that - न चाविद्याचैतन्यसम्बन्धेऽतिव्याप्तिः; साक्षाज्ज्ञाननिवर्त्यत्वस्य विवक्षितत्वात्, तस्याप्यविद्यात्मकत्वाद्वा। LaghuchandrikA explains - अविद्यात्मकत्वादिति **स्वरूपमेव सम्बन्ध** इति भावः।

Thus, whether time is defined as avidyA-chit-sambandha or avidyA itself, the same entity avidyA is meant by time.

A list of citations is provided wherein the definition of time as either avidyA-chit-sambandha or avidyA is provided.

4.1 Time defined as chit-avidyA-sambandha

Time is defined in VedAnta as chit-avidyA-sambandha. The following are the references therefor:

1. चिदविद्यासम्बन्धरूपस्य द्रव्यान्तररूपस्य वा कालस्य ईश्वरप्रसादरूपस्यान्तःकरणगुणविशेषस्य वा अदृष्टस्य अन्येषां च सत्त्वात्। SiddhAnta Lesha Sangrah, page 362.
2. स्वमतेनाह — चिदविद्येति । परमतेनाह — द्रव्यान्तरेति । यद्वा स्वमतेऽपीश्वरस्य कालत्वमभिप्रेत्याह — द्रव्यान्तरेति ।
3. नहि कालो देशो वा धर्मरहितः; मायाचित्संबन्धस्य कालस्य मुक्त्यसहवृत्तित्वात् । - Advaita Siddhi, ब्रह्मनिर्गुणत्वोपपत्तिः
4. न च त्रैकालिकत्वे मिथ्यात्वायोगः; मायाचित्संबन्धस्य कालत्वेन सर्वकालस्थितेरतद्विरोधित्वात् । Advaita Siddhi - जीवब्रह्माभेदानुमानम्
5. ननु कालपरमाण्वादीनां नित्यत्वात्सर्ववस्तुकारणत्वमसिद्धमित्याशङ्क्याह – सर्वेषां हीति । कालादेरपि कार्यत्वं वियदधिकरणन्यायसिद्धमिति सूचनार्थो हि-शब्दः । 'चिदविद्यासम्बन्धः कालः' विष्णुपुराणोक्तरीत्या 'ब्रह्मण एव रूपभेदः कालः' इति पक्षयोः कालस्यानादित्वेन कार्यत्वाभावेऽपि न क्षतिः, आद्यपक्षे

कालस्याविद्यावत्कल्पितत्वेन वस्त्वन्तरत्वाभावात् , द्वितीये कालस्य ब्रह्मस्वरूपत्वादेव वस्त्वन्तरत्वाभावादिति मन्तव्यम् । - VanamAlA.

6. कालो मायात्मसम्बन्धात् सर्व साधारणात्मकः । SUta SamhitA - 2.2.10
7. तथापि कालोऽसत्यत्वान्मायया सह लीयते । शिवो न विलयं याति द्विजाः सत्यस्वभावतः । । SUta SamhitA - 1.8.25
8. अविद्यारूपमहाकालस्यैकस्यापि न सामान्यादिसाधारण एकस्सम्बन्धोऽस्तीति भावः । - LaghuchandrikA - प्रत्यक्ष प्राबाल्य भङ्ग:
9. अथ वृत्त्यनियामकतादात्म्यस्यैव ब्रह्मणि स्वीकारान्न तथेत्युच्यते, तदा 'अज्ञः कालकाल' इत्यादिश्रुत्या ब्रह्मणः अविद्यारूपकालाधारस्योक्त्यनुपपत्तिः।- LaghuchandrikA - सत्यत्व अनुमान भङ्ग:
10. अत एव महाकालावृत्तित्वविशिष्टत्वरूपेण महाकालवृत्तित्वं नेच्छन्ति । - LaghuchandrikA - विशेषानुमानानि
11. सुषुप्तौ भासमानस्याज्ञानाध्यासस्य निर्विकल्पकत्वेन निर्विशेष्यकत्वादज्ञानचित्सम्बन्धेऽवच्छेदकस्य चित्सम्बन्धस्य वक्तुमशक्यत्वात् । - LaghuchandrikA - अनुकूल-तर्क-निरूपणम्

4.2 Time defined as avidyA

1. दिक्कालौ त्वप्रामाणिकत्वान्नोक्तौ । आकाशस्यैव दिग्व्यवहारजनकत्व- सम्भवात् 'दिशः श्रोत्रमिति श्रुतेश्च । कालस्त्वविद्यैव । तस्या एव सर्वाधारत्वादिति । - SiddhAnta Bindu - 8th shlOka
2. अविद्यैवेति । ननु नेदं युक्तम्, प्रतिबिम्बत्वोपहितं जीवं प्रत्यविद्याया आधारत्वेऽपि ईशं प्रति तत्सत्त्वे मानाभावः, शुद्धं प्रति तु सुतराम्, तस्यैव सर्वाधारत्वात्; तत्राह - तस्या एवेति । सर्वाधारत्वात् कालिकसम्बन्धेन स्वेतरसर्वाधारत्वात् । ईशादिकमपि तत्सम्बन्धेन तद्वृत्ति, शुद्धचितस्तु तत्तद्वृत्तित्वाभावेऽपि न क्षतिः । 'ज्ञः कालकालो गुणी सर्वविद्य' इत्यादिश्रुतिषु सर्वदृश्याधारकालाधारत्वात्, 'चक्षुषश्चक्षुरित्यादिश्रुतिषु दृश्यभासकचक्षुरादिभासकत्ववत् । वस्तुतस्तु महाकाले मानाभावः, इदानीमिदमित्यादिबुद्धेर्जन्यमात्ररूपखण्डकालमात्रविषयकत्वमेव । अयं साभासाविद्यारूपः,

अविद्यागताभासाविविक्तचित एव ईश्वरत्वस्योक्तत्वात् । साभासाविद्यायां ईश्वरोपाधित्वमिति भाव: । - NyAya RatnAvalI - 8th shlOka.

4.3 Considered view of VedAnta with respect to time

VedAnta, being a mOksha-shAstra, is aimed only to indicate the non-dual supreme reality Brahman. Since It is non-dual singular inactive reality, there is no logical possibility of time in Brahman because time by its very connotation requires change and motion, which are impossible in inactive reality. Thus, time of our everyday experience is constrained to fall within the scope of either avidyA or avidyA-kArya or avidyA-vyApya.

However, taking these as upAdhi or upalakshaNa, even Brahman can be described through the word time.

In SiddhAnta Bindu, time is equated with avidyA. This is done on account of avidyA being the AdhAra, adhikaraNa of everything. All avidyA-kArya and avidyA-vyApya entities have avidyA as their AdhAra. Since kAla i.e. mahAkAla is also seen to be the AdhAra of everything, it is logical to conclude the identity of avidyA with time. After all, two entities cannot be the AdhAra of everything. That is why SiddhAnta Bindu says, काल: तु अविद्या एव। तस्या: (अविद्याया:) एव सर्वाधारत्वात् इति । SiddhAnta Bindu starts the discussion by saying - दिक्कालौ त्वप्रामाणिकत्वान्नोक्तौ, meaning thereby - dik and kAla have not been enumerated in srishTi-prakriyA propounded in Shruti because they are not prAmANika. The TIkA by V.S. Abhyankar ji explains that the word अप्रामाणिक means पदार्थान्तरत्वेन-अप्रामाणिक. So, dik is non-different from AkAsha and kAla is non-different from avidyA. There is no pramANa in a dik-different-from-AkAsha and a kAla-different-from-avidyA. So, there is

pramANa-abhAva in accepting a mahAkAla-as-per-NyAya. But there is no problem in accepting a mahAkAla-non-different-from-avidyA. [https://archive.org/details/tzxE_siddhanta-bindu-commentary-on-the-dasha-sloki-of-sankaracharya-of-madhusudana-sa]

The concept is taken up for further exploration by GauDa BrahmAnanda SaraswatI ji in NyAya RatnAvalI. He explains:

अविद्यैवेति । ननु नेदं युक्तम्, प्रतिबिम्बत्वोपहितं जीवं प्रत्यविद्याया आधारत्वेऽपि ईशं प्रति तत्सत्त्वे मानाभावः, शुद्धं प्रति तु सुतराम्, तस्यैव सर्वाधारत्वात्; तत्राह - तस्या एवेति । सर्वाधारत्वात् कालिकसम्बन्धेन स्वेतरसर्वाधारत्वात् । ईशादिकमपि तत्सम्बन्धेन तद्वृत्ति, शुद्धचितस्तु तत्तद्वृत्तित्वाभावेऽपि न क्षतिः । 'ज्ञः कालकालो गुणी सर्वविद्य' इत्यादिश्रुतिषु सर्वदृश्याधारकालाधारत्वात्, 'चक्षुषश्चक्षुरित्यादिश्रुतिषु दृश्यभासकचक्षुरादिभासकत्ववत् । वस्तुतस्तु महाकाले मानाभावः, इदानीमिदमित्यादिबुद्धेर्जन्यमात्ररूपखण्डकालमात्रविषयकत्वमेव । अयं साभासाविद्यारूपः, अविद्यागताभासाविविक्तचित एव ईश्वरत्वस्योक्तत्वात् । साभासाविद्यायां ईश्वरोपाधित्वमिति भावः।

Opponent: Is it not illogical to say that avidyA is the AdhAra of everything? avidyA may well be the AdhAra of jIva which is pratibimbatva-upahita (qualified with pratibimba-tva). However, to claim avidyA as AdhAra of Ishwara is devoid of any pramANa. And of course, avidyA is not the AdhAra of shuddha chaitanya because it is actually the shuddha chaitanya which is the AdhAra of everything. So, the claim that avidyA is the AdhAra of everything and hence time can be equated with avidyA is wrong.

Answer: When it is said that avidyA or kAla is AdhAra of everything, then it means that it is the AdhAra through kAlika-sambandha of all-things-distinct-from-itself. Ishwara is also located in avidyA through kAlika-sambandha. In case of shuddha chaitanya, despite not being located in

avidyA through kAlika-sambandha, there is no harm because shuddha chaitanya is the illuminator of even kAla/avidyA. The Shruti 'ज्ञः कालकालो गुणी सर्वविद्य' explains shuddha chaitanya to be the AdhAra of kAla which is the AdhAra of all drishya. Just as shuddha chaitnaya is stated as the illuminator of eyes etc, which are illuminator of drishya, through Shruti 'चक्षुषश्चक्षु:', similarly shuddha chaitanya is revealer of kAla also which in turn is the AdhAra of everything. [These discussions are with respect to mahAkAla]

The truth of the matter is that there is no pramANa in accepting a mahAkAla (as accepted by NyAya which is different from avidyA. One can however pretty well accept a mahAkAla identical to avidyA on account of it being the AdhAra of everything).

Objection: But then how do you explain the experiences in the form of इदानीम्, तदानीम् etc. It is in order to explain these experiences, one is constrained to admit kAla.

Answer: Well, the cognitions of इदानीम्, तदानीम् etc can be explained by having khanDa-kAla, which is born, as the vishaya.

The mahA-kAla is basically sAbhAsa-avidyA. And in this sAbhAsa-avidyA, i.e. in mahAkAla, there is upAdhi-tva of Ishwara. After all, shuddha-chaitanya not differentiated from AbhAsa-within-avidyA is referred to as Ishwara.

Thus, while a mahAkAla, which is identical with sAbhAsa-avidyA, is accepted in advaita, the mahAkAla-as-per-NyAya is not admitted. As far as the

cognitions of इदानीम्, तदानीम् are concerned, they can be explained to have khaNDa-kAla as their vishaya and this khaNDa-kAla is born.

Thus, vedAnta dismisses a universal time. It also dismisses space as illusory. This is in contrast to Modern Science which though refutes space and time individually, does retain a new entity called space-time. VedAnta rejects the reality of all notions of time.

This is rooted in the logical derivation that sole reality has to be timeless and hence time must be either avidyA or within the domain of avidyA.

4.4 Time in drishTi-srishTi-vAda

In drishTi-srishTi-vAda, the complete identity of waking world with dream world is postulated. Even sushupti is also equated with dream. In DSV, all creation is accepted to be simultaneous and not sequential. It holds that from avidyA not only are the objects born, but चिरन्तनत्व, पूर्व-पश्चात्-भावित्व and परस्पर कार्य-कारणता are also born. Since creation is simultaneous, and पूर्व-पश्चात्-भावित्व is also simultaneously born, there is no occasion to invoke time to explain the cognitions of इदानीम्, तदानीम् etc. There is no need to infer time to explain परत्व and अपरत्व either because these two are simultaneously born. Since all notions which are sought to be explained by using time can be equally explained through avidyA-vritti, there remains no necessity to accept time. This is in line with the siddhAnta explained in SiddhAnta Bindu and NyAya RatnAvalI.

4.5 Is time same as AvaraNa

AvaraNa is discussed in great detail in advaita texts. PanchapAdikA VivaraNa says in prathama varNaka - अयमर्थः--"अस्ति, प्रकाशते" इत्याद्यभिज्ञादिव्यवहारं प्रति

पुष्कलकारणे सति--"नास्ति न प्रकाशते च" इति योऽयं आत्मतत्त्वालम्बनो व्यवहार:, स: भावरूपेण केनचित् आत्मनि आवरणमन्तरेण नोपपद्यते.... अविद्यासम्बन्धत्वादेव आवरणस्य अनिरूपतिताकारता च युक्ता इति भाव:।

GItA BhAshya says - तामसो हि प्रत्यय:, आवरणात्मकत्वात् अविद्या विपरीतग्राहकः, संशयोपस्थापको वा, अग्रहणात्मको वा ; विवेकप्रकाशभावे तदभावात् , तामसे च आवरणात्मके तिमिरादिदोषे सति अग्रहणादे: अविद्यात्रयस्य उपलब्धे:॥

Advaita Siddhi says in avidyA-vishaya-vichArah आवरणं च तद्योग्यता अज्ञानसंबन्धरूपा सुषुप्त्यादिसाधारणी आब्रह्मज्ञानमवतिष्ठते ।

It is remarkable to see that AvaraNa and time are identically defined in advaita vedAnta as avidyA-chit-sambandha. And they are essentially avidyA alone as the avidyA-swarUpa itself is stated as sambandha between avidyA and chaitanya. Further, mahAkAla-as-per-NyAya is categorically rejected in advaita.

This leaves us with the analysis of the experience of AvaraNa and experience of time. While in waking and dream, both experiences are vivid, it is a matter of considered conclusion of vedAnta that in sushupti, there is a sAkshi-pratyaksha of AvaraNa avidyA which leads to subsequent memory on waking up - I did not know for so long. It is also a matter of experience that the khanDa-kAla is not experienced in sushupti nor is there mention of any avidyA-vritti having the form of khanDa-kAla therein. <u>It accordingly transpires that if time is defined as either avidyA or avidyA-chit-sambandha, AvaraNa can be equated with time. However, in case of khaNDa- kAla, which is emergent and avidyA-kArya, one cannot equate AvaraNa with it</u>.

4.6 A quick summary of the analysis

As per Modern Science, there is no universal time. It varies from person-to-person and is also dependent on external conditions such as presence of massive objects in vicinity. Time is not an entity in itself but can at best be portrayed as a projection of an entity named as spacetime. As a shadow of spacetime, time varies from person A to person B. If the heart-rate of both A and B is 75 beats per minute when there is no relative motion between them, then as per A, the B's heart rate will be much lower if B is in relative motion with respect to A. Similarly, time passes differently for A at sea-level and B at the top of Mt. Everest. Thus, though Modern Science refutes time as an independent entity, it retains a real spacetime. However, since spacetime is also an object of knowledge, as per VedAnta, this would also be illusory.

NyAya takes an extremely common sense view of time and infers the existence of an eternal, omnipresent, singular dravya named mahAkAla having no vyavahAra-yOgyatA. Through born-upAdhis, it accomplishes vyavahAra-yOgyatA and becomes the cause of vyavahAra such as past-ness/future-ness etc. We have seen that no valid pramANa can be adduced for that. Further, since anumAna and Shruti show complete identity of waking and dream, and just as there is no need to accept a mahAkAla to explain dream-cognitions of time, there is no need to accept mahAkAla to explain waking-cognitions of time either. Thus, NyAya's view of having mahAkAla etc is devoid of merit.

Advaita VedAnta takes up the discussion of time at several levels. As per the core theory of advaita vedAnta, there cannot be any time as singular inactive reality, Brahman, cannot accommodate change without which time cannot be conceived. However, advaita uses several prakriyAs to arrive at its supreme teaching. In those prakriyAs, time is variously defined which suit the seeker at different stages of his spiritual evolution. Time can be described as a flow (TaittirIya AraNyaka), or as kriyA-shakti of Ishwara, or as taTastha-lakshaNa of Brahman, or as upalkshaNa of AtmA, or as avidyA or as avidyA-chit-sambandha or it can be dismissed completely. When time is described as avidyA-chit-sambandha or avidyA, in that case, it can be equated with AvaraNa. And when time is not equated to either avidyA or avidyA-chit-sambandha, rather is accepted to be born, it loses all its special treatment. It becomes like any other seen object, like a table or chair. There is no need to pay any special attention to time.

In the considered view of the writer of this note, time is just like any other seen. There is no need to pay any attention to it. No need to analyse changes in passage of time with respect to different observers or changes in the vicinity of massive objects. Time is also seen, and is hence illusory. And is hence not worthy of being paid any attention. It needs to be ignored, just as a mirage is ignored. It is however pertinent to note that ignoring ignorance, ignoring AvaraNa, ignoring time and ignoring causality practically appear to be the same. In that perspective, ignorance, AvaraNa, time and causality all appear to be practically the same. If I reject one, the others stand rejected *ipso facto*. And one situates as one's own Self.

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